cern the beauty that lurks in a vast number of the songs of the American Indian.

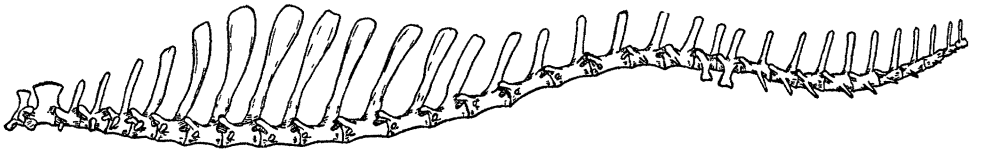
ALICE C. FLETCHER.

SPECIAL ARTICLES

THE DORSAL SPINES OF CHAMELEO CRISTATUS, STUCH

SINCE the discovery of the long-spined Pelycosauria, in Texas, no similar condition has been reported in any living form. Cope referred to the dermal spines of *Iguana* and *Basiliscus* as the nearest condition to that of the fossil forms. Baur noted one or two lizards in which one or two spines were a little longer than the others. Through the kindness of Dr. A. G. Ruthven, curator of the Museum in the University of Michigan, I have been enabled to examine a specimen of *Chameleo cristatus* from Efulen Kribi in the Cameroon district, sent to the museum of the university by the Rev. Geo. Schwab, a missionary. The accompanying figure shows the condition of the spines of the vertebræ. The elevated neural spines beginning with the axis extended to the tenth caudal and then rapidly diminish in size on the long and slender tail. At the base of the larger spines there is a very slight enlargement indicating the attachment of the dorsal muscles which reached to that point. The upper ends of the spines were attached by a strong thread of connective tissue and the interspaces between the spines were filled by a very thin membrane of the same tissue. A few scattering threads of muscle were dispersed over the membrane. The condition of this specimen is of great interest as it shows almost exactly the conditions which have been imagined to exist in the Pelycosauria. In the literature of this group I find the presence of the elevated neural spines mentioned but they have not been figured and have never been referred to in explanation of the Permian forms.

Unfortunately this gives us no hint of the use of the elongated spines in the ancient forms. Only two species of the genus, *cristatus* and *montium*, have the elevated spines; the others have a crest supported by dermal rods. The habits of the forms are not sufficiently well known to make any suggestion as to the use of the crest or spines. It is perhaps significant that the chameleons are a highly specialized and decadent group just as the Pelycosauria were and that there is a decided tendency to develop seemingly useless horns and spines in other parts of the body just as there was in the Pelycosauria. It leaves one with the same impression of some sort of physiological excess of growth.



Vertebral column of *Chameleo cristatus* Stuch, from Efulen Kribi, Cameroon, showing elevated neural spines.

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ON THE CHEMISTRY AND DEVELOPMENT OF THE YOLK PLATELETS IN THE EGG OF THE FROG (RANA PIPIENS)

THE yolk platelets in the frog's egg contain 6 per cent. of lecithin and 94 per cent. of a proteid having the following composition: 1.21 per cent. of phosphorus, 1.32 per cent. of sulphur and 15.14 per cent. of nitrogen. I used gravimetric methods in determining phosphorus and sulphur and the Kjeldahl method in determining nitrogen. This composition and the precipitation reactions of the proteid indicate it to be a nucleoalbumin related to the vitellins and ichthulins of the yolk of the eggs of birds and fish, hence I will call it batrachiolin.

In the germinal vesicles of the ovarian eggs nucleoli arise from the chromatin. These nucleoli grow and multiply by fission and budding, and during the fall of the year migrate

into the cytoplasm, where they break up into finely granular masses called yolk nuclei. The yolk nuclei become more or less diffused through the cytoplasm, and, especially toward the egg membrane, give rise to the yolk platelets, which are at first minute, but grow during the winter to large size. Thus the nucleoalbumin of the yolk platelets is derived from the nucleoproteids of the nucleus.[1] Whereas I am entirely ignorant of the steps by which a nucleoproteid might be changed into a nucleoalbumin, the phosphorus content of the egg nucleoalbumins (.4–1.5 per cent.) is about the same as that of the native nucleoproteids studied by Halliburton.[2] We might compare the migrating nucleoli to the trophochromatin of the protozoa and metazoa.[3] Whereas the nucleolus is more acidophilous to stains than the idiochromatin (chromosomes), it is more basiphilous than the general cytoplasm, and I see no objection to calling it trophochromatin. Goldschmidt[4] found the chromidia (trophochromatin) of some protozoa to give rise to "glanzkorper" or glycogen granules which might be compared in function to the yolk platelets of the frog's egg.

Whereas I found that the nucleoli were of greater specific gravity than the nuclear sap, and could be thrown out of the germinal vesicle by centrifugal force, there is no indication that gravity aids in the normal extrusion of the nucleoli. Such migration of nucleoli is a wide-spread phenomenon in animals and plants.[5]

J. F. McClendon

University of Missouri,
May 15, 1909

THE STRUCTURE OF LILY PISTILS

In an extended study of the structure of the pistils of Liliaceæ some results have been reached that warrant the publication of this preliminary note pending the completion of the work.

The pistils of the lilies are in general alike. However, certain differences exist among them (1) in regard to the formation of the partition walls of the ovary and (2) in regard to the development of the ovules. It is the prevailing opinion among botanists that the margins of the carpels in the Liliaceæ infold to form the partition walls of the ovary and also to produce the ovules. This is true of some lilies but it is not true of all lilies. It has been found that certain lilies develop the partition walls of their ovaries, also their ovules, from the middle portion of their carpels. In this type of ovule-production the midribs of the carpels become thicker, push in to the central axis of the ovary, unite and produce the ovules.

The following plants have been found to develop their ovules from the midribs of their carpels: *Lilium longiflorum* Thunb., *Lilium longiflorum eximium* Nichol., *Lilium candidum* Linn., *Erythronium albidum* Nutt., *Convallaria majalis* Linn., *Tradescantia bracteata* Small, *Zebrina pendulata* Schnitzl., *Tulipa* sp.

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[1] The amphibian nucleolus is said by Carnoy and Lebrun to contain a small amount of nucleoalbumin.

[2] *Jour. of Physiol.*, Vols. 17 and 18.

[3] Cf. Moroff, *Arch. f. Zellforschung*, Vol. 2.

[4] *Arch. f. Protistenkunde*, Vol. 5.

[5] Walker and Tozier, *Quart. Jour. of Exper. Physiol.*, Vol. 2.

SOCIETIES AND ACADEMIES

THE IOWA ACADEMY OF SCIENCE

The twenty-third annual meeting of the Iowa Academy of Science was held at the State University, Iowa City, on April 31 and May 1. A public meeting was held on the evening of April 30 for the presentation of the address of the president, Professor Samuel Calvin, on "The Work of the Iowa Geological Survey," and a lecture by Professor William A. Locy, of Northwestern University, on "The Service of Zoology to Intellectual Progress." Before the beginning of the evening program Professor C. E. Seashore gave demonstrations of the tonoscope in his laboratory.

In the progress of the two sessions of the academy the following papers were presented:

Comet C, 1908 (Morehouse): D. W. Morehouse.

An account of the comet discovered in September, 1908, while photographing at the Yerkes Observatory.

The Polyporaceæ of Fayette, Iowa: Guy West Wilson.